REMARKS

Applicants appreciate and would like to thank Examiner Bhat for taking time to conduct a telephone interview on March 11, 2009 with Mr. Jeffrey J. Barclay (Reg. No. 48,950) and Ms. Shu Chen. During the interview, the Office Action dated January 8, 2009, the cited references, and the disclosure of the application were discussed.

Claims 1-17 are pending in the application, of which claim 1 is independent. Applicants have amended independent claim 1 along with claims 3 and 17. No new matter has been added by way of these amendments. Favorable reconsideration and further examination of the action mailed on January 8, 2009 are respectfully requested in view of the foregoing amendments and the following comments of the Applicants, which are preceded by related comments of the Examiner in small bold type:

Claim Rejections - 35 USC § 101

Claims 1-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Without conceding to the Examiner's position, Applicants have amended independent claim 1 to expedite prosecution. Withdrawal of this rejection is respectfully requested.

Claim Rejections - 35 USC § 112

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
Specifically, it is not clear what position is being adjusted. Is applicant referring to the position of an object, the signal, etc? Further it is unclear what constitutes a disturbed and undisturbed field.

Amended independent claim 1 now recites, among other things, adjusting a position indication signal of at least one sensor, based on a disturbed amplitude and phase, an undisturbed amplitude ratio, and an undisturbed phase.

Referring to the subject application, the presence of conductive objects can disturb position indication signals of one or more sensors within a magnetic tracking system (see, e.g., background). In order to remove measurement error caused by such distortion, the system, for

example, analyzes a pair of position indication signals measured at two different frequencies. In this regard, for example, the originally filed application on page 8, second paragraph reads:

> Properties of the eddy currents generated by the presence of conductive objects near the magnetic tracking system 14 depend on the excitation frequency and the coupling of the transmitted AC magnetic field. A computer system 18 or other computational unit analyzes the position indication signals generated at multiple frequencies. Based on the position indication signals, computer system 18 calculates the eddy current phase and amplitude and compensates the position indication to remove the measurement error induced by the eddy current.

As such, based on the measured signals at two distinct frequencies, the system determines the extent of disturbance and adjusts a position indication signal to remove measurement error.

In regards to disturbed and undisturbed fields, an undisturbed field can be considered, e.g., an electromagnetic field (produced by a field generator included in the magnetic tracking system) in which a conductive object is absent. The presence of one or more conductive objects may disturb the electromagnetic field and affect the position indication signals (e.g., the amplitude and phase) of the sensors of the system. In this regard, for example, the originally filed application on page 7, first paragraph reads:

> Referring to FIG. 1, a coordinate measurement system 10 includes a magnetic tracking system 14 having one or more sensors 16. Magnetic tracking systems (also referred to as coordinate measurement systems) are susceptible to distortions (also referred to as disturbances) due to eddy currents resulting from the presence of conductive materials in or near the sensor 16 and/or the field generator 12. Examples of conductive materials include metals (e.g. stainless steel), carbon fiber, and certain conductive plastics.

As such, the presence of conductive material may disturb an undisturbed field such as an electromagnetic field. Applicants submit that disturbed and undisturbed fields are clearly defined in the subject application.

Claim Rejections - 35 USC § 103

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being anticipated by Govari et al. (EP 1 203 560) in view of Ashe (USPUB 2003/0011359).

Amended independent claim 1 recites determining an undisturbed amplitude ratio that relates the amplitude of a first position indication signal at a first frequency to the amplitude of a

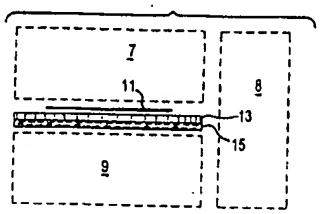
second position indication signal at a second frequency, wherein the second frequency is different from the first frequency.

The Examiner acknowledges on page 4 of the current office action that "Govari does not appear to teach determining an undisturbed ratio that relates the amplitude." However, the Examiner appears to rely on Ashe (page 6, paragraph 0061) for allegedly disclosing this feature.

Applicants submit that Ashe does not remedy the foregoing deficiencies of Govari since Ashe does not disclose or suggest determining an undisturbed field amplitude ratio at two distinct frequencies. Rather, the reference describes measuring a disturbed field amplitude ratio at two different locations (based upon the location of a transmitter). In particular, with reference to Fig. 6 of Ashe (reproduced below), a ratio of magnetic field amplitudes is calculated from a magnetic field located above a transmitter (defined as region 7) and a magnetic field adjacent to the transmitter (defined as region 8) or a magnetic field under the transmitter (defined as region 9). In this regard, Ashe at paragraph 0061 states:

> [0061] It is thus seen that if the field vectors in the operating volume above the transmitter assembly remain constant in magnitude and direction while the field magnitude in the regions adjacent to and under the transmitter assembly are reduced, then metallic objects in those regions will have a proportionally reduced distorting effect on the filed in the operating volume above the transmitter assembly. If the field magnitude in the operating volume above the transmitter assembly is increased while the field magnitudes in the region adjacent to and under the transmitter assembly remain constant, the distortion reducing effect is similar. Accordingly, the ratio of the magnetic field amplitude in the operating region above the transmitter assembly over that of the regions adjacent to and under the transmitter assembly may be used to predict sensitivity to metallic objects. A similar description applies to ferromagnetic distortion effects when the distorting objects are located in the regions adjacent to and under the transmitter assembly.

FIG. 6



Ashe appears silent in regards to using fields with multiple frequencies. Based on the disturbed field amplitudes ratio, Ashe merely adjusts and attenuates the magnetic field strength

surrounding the transmitter so that a metallic object in the vicinity of the transmitter would not affect magnetic sensor measurements.

Thus, Ashe is not understood to disclose or suggest determining an undisturbed amplitude ratio that relates the amplitude of a first position indication signal at a first frequency to the amplitude of a second position indication signal at a second frequency, wherein the second frequency is different from the first frequency, as required by amended independent claim 1.

For at least these reasons, Applicants submit that amended independent claim 1 is not anticipated by Govari or Ashe, taken alone or in combination.

Accordingly, neither Govari nor Ashe is understood to disclose or suggest the subject matter of claims 2-17, which depend directly or indirectly from independent claim 1. As such, dependent claims 2-17 are also believed patentable.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, the Applicants respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Please apply any charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 07508-0055001.

Respectfully submitted,

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